AMENDMENT TO THE CLAIMS

1. (Currently Amended) A process device for use in a process control system, comprising:

output circuitry configured to couple to ~~the~~a process control loop and control electrical current through the loop to transmit process-related information; and

loop override circuitry, separate from the output circuitry configured to override ~~operation of~~the control of electrical current through the loop by the output circuitry and set the electrical current ~~in~~through the loop to a desired current level.

2. (Original) The apparatus of claim 1 including diagnostic circuitry configured to detect an alarm condition and responsively actuate the loop override circuitry.

3. (Original) The apparatus of claim 2 wherein the diagnostic circuitry measures a quiescent current level.

4. (Original) The apparatus of claim 2 wherein the diagnostic circuitry includes a sense resistor connected in series with the loop.

5. (Original) The apparatus of claim 2 wherein the diagnostic circuitry includes an analog to digital converter.

6. (Original) The apparatus of claim 2 wherein the diagnostic circuitry monitors trends in the current.

7. (Original) The apparatus of claim 2 wherein the diagnostic circuitry includes a microcontroller.

8. (Original) The apparatus of claim 1 wherein the process device is a process variable transmitter.

9. (Original) The apparatus of claim 1 wherein the process device is a process controller.

10. (Original) The apparatus of claim 1 wherein the process device is configured for use in a Safety Instrumented System.

11. (Original) The apparatus of claim 1 wherein the desired current level is more than 21 mA or less than 3.8 mA.

12. (Original) The apparatus of claim 1 wherein the loop override circuitry includes a microcontroller.

13. (Original) The apparatus of claim 1 wherein the process device is completely powered with power received through the process control loop.

14. (Original) The apparatus of claim 1 wherein the process control loop operates in accordance with the HART® protocol.

15. (Original) The apparatus of claim 1 including a comparator configured to actuate the loop override circuitry if the loop current is outside of a predetermined threshold level.

16. (Original) The apparatus of claim 1 wherein the loop override circuitry is connected in parallel with the output circuitry.

17. (Original) The apparatus of claim 1 wherein the loop override

circuitry is connected in series with the output circuitry.

18. (Original) The apparatus of claim 1 wherein the loop override circuitry is configured to disconnect the output circuitry from the process control loop.

19. (Original) The apparatus of claim 1 wherein the loop override circuitry is configured to shunt current across the output circuitry.

20. (Original) The apparatus of claim 1 including a watch dog circuit configured to activate the loop override circuitry.

21. (Original) The apparatus of claim 1 including a microcontroller configured to activate the loop override circuitry.

22. (Original) The apparatus of claim 21 wherein the microcontroller activates the loop override circuitry based upon trends in the loop current.

23. (Original) The apparatus of claim 21 wherein the microcontroller actuates the loop override circuitry based upon a comparison of the loop current with an expected value of the loop current.

24. (Original) The apparatus of claim 1 including circuitry configured to disconnect circuitry within the process device.

25. (Original) The apparatus of claim 1 wherein the loop override circuitry is configured to disconnect the output circuitry and control the loop current level.

26. (Original) The apparatus of claim 25 wherein the loop current level is controlled by a redundant output circuit.

27. (Original) The apparatus of claim 1 wherein the process device is configured for use in a Safety Instrumented System (SIS).

28. (Original) The apparatus of claim 1 and further comprising a sensor configured to sense a process variable.

29. (Original) The apparatus of claim 28 wherein the process device is a process variable transmitter.

30. (Original) The apparatus of claim 1 wherein the output circuitry is configured to operate in accordance with one of the group of communication protocols consisting of Fieldbus, Profibus and HART®.

31. (Original) The apparatus of claim 1 wherein the output circuitry is configured to couple to a process control loop type selected from the group consisting of two-wire, three-wire and four-wire.

32. (Original) The apparatus of claim 1 wherein the loop override circuitry is further configured to electrically disconnect the process device from the process control loop.

33. (Currently Amended) A method implemented in a process device of sending a desired current signal on a process control loop, comprising:

controlling loop current in the process control loop based upon a sensed process variable with output circuitry in a device coupled to the process

control loop;

detecting an alarm condition in ~~a~~ the process device coupled to the process control loop;

overriding ~~operation of~~control of the loop current by the output circuitry in the device in response to a detected alarm condition~~, ;the output circuitry configured to control current in the process control loop;~~ and

controlling the loop current to a desired level during the step of overriding. ~~operation of the output circuitry.~~

34. (Original) The method of claim 33 wherein the alarm condition is related to quiescent current draw.

35. (Original) The method of claim 34 wherein detecting includes detecting trends in the quiescent current draw.

36. (Original) The method of claim 33 wherein the desired current level is more than 21 mA or less than 3.8 mA.

37. (Original) The method of claim 33 wherein the step of overriding is implemented in a microcontroller.

38. (Original) The method of claim 33 wherein the step of detecting is implemented in a microcontroller.

39. (Original) The method of claim 33 including completely powering the process device with power received through the process control loop.

40. (Original) The method of claim 33 wherein the process control loop operates in accordance with the HART® protocol.

41. (Original) The method of claim 33 wherein the step of detecting includes comparing a current to a predetermined threshold level.

42. (Original) The method of claim 33 wherein the step of overriding includes disconnecting output circuitry from the process control loop.

43. (Original) The method of claim 42 and further comprising controlling the loop current level with a redundant output circuit.

44. (Original) The method of claim 33 wherein the step of controlling includes shunting current across output circuitry.

45. (Original) The method of claim 33 wherein the step of detecting includes monitoring trends in the loop current.

46. (Original) The method of claim 33 wherein the step of detecting includes comparing the loop current with an expected value of the loop current.

47. (Original) A process device implementing the method of claim 33.

48. (Currently Amended) The method of claim 33 and further comprising sensing ~~a~~ the process variable.

49. (Original) The method of claim 33 and further comprising communicating over the process control loop in accordance with a protocol selected from the group of protocols consisting of Fieldbus, Profibus, and HART®.

50. (Original) The method of claim 33 implemented in a device configured for use in a Safety Instrumented System.